US Army Corps of Engineers®
Engineer Research and Development Center

Stryker Terrain Impact Tests

Problem

The training lands comprising U.S. Army Alaska (USARAK) include more than 1.6 million acres of widely varied terrain subjected to weather extremes. These training lands are primarily used by light tracked vehicles associated with the light infantry of the 172nd Brigade. Transformation to a Stryker Brigade Combat Team involves use of the 20-ton Stryker wheeled vehicle. An analytical method was needed to quantify the impacts of the new brigade structure and its operations on the training lands.

Description

To gain a better understanding of the terrain disturbance generated by Stryker vehicles on training lands, USARAK and the Engineer Research and Development Center's Cold Regions Research and Engineering Laboratory (ERDC-CRREL), in cooperation with the Cold Regions Test Center (CRTC), conducted Stryker impact tests at Donnelly Training Area in March and May 2003. (CRTC is a subordinate command of Yuma Proving Ground and the winter test element of the Army Test and Evaluation Command [ATEC]).The March test was conducted when the ground was frozen and on approximately six inches of snow. The Stryker impact tests in May were performed on various terrains at three locations during spring breakup.

Stryker impact test on snow (March 2003).

The sites of the winter and spring tests were revisited in August 2003 to evaluate the soil and vegetation recovery. Because the ground was frozen, results from the winter maneuvers showed no rutting; impact to vegetation was minimal and all roots were intact.

Rutting that occurred during the May test was closely related to thaw depth at that location, ranging from 0 to 15 inches. Terrain disturbance varied from minimal (tire imprint with vegetation still intact) to severe (deep ruts, piles and clumps of dirt on the side of the ruts).

Further analysis and survey of the recovery over time is needed to gain an understanding and quantification of the disturbance.

Expected Products

This research will provide environmental assessment of impacts of proposed range expansion projects and quantify the disturbance that the Stryker vehicle will be generating on the terrain for planning and sustainable land management.

Stryker impact test during spring thaw (May 2003).

Potential Users

U.S. Army Training Land Managers for planning and management of training land assets.

Projected Benefits

By understanding the propensity and extent of potential disturbance, Army's Integrated Training Area Management (ITAM) program can recommend smarter training schedules and plan for repair costs. This research also has provided ITAM with input for the Army Training and Testing Area Carrying Capacity (ATTACC) model, which can be used to evaluate potential impacts of the future Stryker Brigade Combat Team (SBCT) in Alaska, as well as other SBCTs.

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